Sub a1

WHAT IS CLAIMED IS:

1. A method of preparing a data packet indicative of operator manipulation of a hand held computer input device, the method comprising:

receiving information indicative of a physical orientation of the computer input device;

receiving information indicative of a configuration of a multiple-switch device on the computer input device; and

placing data in an orientation field and a multiple-switch field in the data packet.

2. The method of claim 1 and further comprising:

receiving information indicative of a selected mode of a plurality of selectable modes of operation; and

placing the data in the orientation field and the multiple-switch field in the data packet based on the selected mode.

3. The method of claim 2 wherein the step of placing the data comprises:

placing orientation data indicative of the physical orientation of the computer input device in the orientation field when the selected mode is a first selected mode; and

placing predetermined orientation data in the orientation field when the selected mode is a second selected mode, the predetermined orientation data corresponding to the configuration of the multiple-switch device.

4. The method of claim 3 wherein placing predetermined orientation data comprises:

selecting a predetermined orientation value from a plurality of predetermined orientation values based on the configuration of the multiple-switch device.

5. The method of claim 3 wherein placing the data further comprises:

placing predetermined switch configuration data in the multiple-switch field when the selected mode is the second selected mode.

6. The method of claim 5 wherein the predetermined switch configuration data corresponds to depression of no switches in the multiple-switch device.

7. The method of claim 2 wherein the step of placing the data in the orientation field and the multiple switch field in the data packet based on the selected mode is performed on the computer input device.

8. The method of claim 2 wherein the computer input device is coupled to a computer and wherein the step of placing the data in the orientation field and the multiple switch field in the data packet based on the selected mode is performed on the computer.

9. The method of claim 8 wherein the computer includes an input device driver and wherein the step of placing the data in the orientation field and the multiple switch field in the data packet based on the selected mode is performed on the computer by the

input device driver.

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10. The method of claim 10 wherein the step of placing the data in the orientation field and the multiple switch field in the data packet based on the selected mode is performed on the computer by the input device driver by:

receiving an input device data packet comprising an orientation field including orientation information indicative of the physical orientation of the computer input device, a multiple-switch field including switch information indicative of the configuration of the multiple-switch device and a mode field including mode information indicative of the selected mode; and

maintaining the orientation information in the orientation field and the switch information in the multiple-switch field when the selected mode is a first selected mode.

11. The method of claim 10 wherein the step of placing the data in the orientation field and the multiple switch field in the data packet based on the selected mode is performed on the computer by the input device driver by:

replacing the orientation information in the orientation field with a predetermined orientation value, based on the switch information, when the selected mode is a second selected mode.

12. The method of claim 11 wherein the step of

placing the data in the orientation field and the multiple switch field in the data packet based on the selected mode is performed on the computer by the input device driver by:

replacing the switch information in the multiple-switch field with a predetermined value when the selected mode is the second selected mode.

13. A method of preparing a data packet indicative of operator manipulation of a hand held computer input device, the method comprising:

receiving orientation information indicative of a physical orientation of the computer input device;

receiving rotation information indicative of rotation of a rotatable member on the computer input device; and

placing data in an orientation field and a rotation field in the data packet based on the orientation information and the rotation information.

14. The method of claim 13 and further comprising

receiving switch information indicative of a configuration of a multiple-switch device on the computer input device; and

placing data in a multiple-switch field in the data packet based on the switch information.

15. The method of claim 14 and further comprising

receiving button information indicative of depression of a plurality of buttons on the

computer input device; and

placing data in a button field in the data packet based on the button information.

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16. A data structure generated by a computer input device for transmission to a computer, comprising:

an orientation field containing orientation data indicative of a physical orientation of the computer input device; and

a switch field containing switch information indicative of a multiple-switch device on the computer input device.

17. The data structure of claim 16 and further comprising:

a rotation field containing rotation information indicative of rotation of a rotatable member on the computer input device.

18. The data structure of claim 17 and further comprising:

a button field containing button information indicative of depression of buttons on the user input device.

19. The data structure of claim 18 and further comprising:

a mode field containing mode information indicative of a state of a mode selector on the computer input device.

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20. A computer input device, comprising:

a first housing portion including at least one

user actuable input device;

a first extending handle, coupled to and extending away from, the first housing portion;

a second extending handle, coupled to and extending from the first housing portion;

an orientation sensor coupled to the first housing portion and sensing a physical orientation of the first housing portion and providing an orientation signal indicative thereof; and

a controller coupled to the orientation sensor and configured to receive the orientation signal and place data in an orientation field, based on the orientation signal, in a data packet.

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21. The computer input device of claim 20 and further comprising:

a multiple-switch device, actuable by an operator, the controller being configured to receive switch information indicative of a configuration of the multiple-switch device and to place switch data in a multiple-switch field in the data packet based on the switch information.

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22. The computer input device of claim 21 and further comprising:

a mode selector, actuable by an operator, the controller being configured to receive mode information indicative of a selected mode of a plurality of selectable modes of operation

and to place the data in the orientation field and the multiple-switch field in the data packet based on the selected mode.

Sub a5

23. A method of controlling a visual display on a computer display device based on an input from a computer input device, the method comprising:

receiving orientation information indicative of a physical orientation of the computer input device;

receiving switch information indicative of a configuration of a multiple-switch device on the computer input device;

receiving mode information indicative of a selected mode of operation; and

controlling the display device such that an object being displayed on the visual display device assumes a visual orientation corresponding to one of, the physical orientation of the computer input device as indicated by the orientation information and the configuration of the multiple-switch device as indicated by the switch information, based on the selected mode.